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Food Insecurity and Socially Responsible For-Profit Entities

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Abstract

This paper explores the viability of a for-profit entity being dedicated to addressing food insecurity. Through examination of challenges associated with food insecurity, as well as through review of current, effective for-profit food distributors in the U.S. food system, this paper identifies the need for an alternative approach to resolving food insecurity. The paper posits that such an approach may exist through business model integration in establishing a new, socially responsible for-profit entity.

Food Insecurity and Socially Responsible For-Profit Entities

Introduction

Food insecurity refers to "a household's inability to provide enough food for every person to live an active, healthy life" (Hunger in America, 2020, para. 1). Food insecurity is of important concern, as it represents a measurement of an individual's and society's well-being (Bartfeld and Dunifon, 2006, p. 921). Since the 1990s, researcher and governmental emphasis has increased on the examination of household and individual food insecurity because of the information it reveals regarding the causes and impacts of hunger. This trend continues today and manifests itself through measurement practices and response, conducted in large, by the federal government. This paper seeks to illuminate the issue of food insecurity by examining its extent and response in the United States. Specifically, through interdisciplinary assessment of the issue of food insecurity, this paper pinpoints current inefficiencies in efforts aimed at ending hunger in the U.S., while identifying the market opportunity for a for-profit entity to capitalize in focusing operations on hunger-relief activities that improve an individual's or household's quality of life.

The Problem

Several issues exist surrounding food insecurity and the response to it. The sheer number of individuals affected by hunger is not the only concern surrounding the subject. Numerous definitions and varying measurement practices add to the complexity with which key stakeholders (i.e. non-profits and the government) approach the issue. This section will highlight the number of people affected by food insecurity in the United States. Additionally, this section will provide further discussion on the complexities associated with the comprehension and addressing of food insecurity based on its definition and measurement. Comprehension of the scope of those in hunger, in conjunction with existing definitions and measurement practices,

will be integral in a firm's ability to strategize profitable product/service offerings to those impacted by food insecurity.

Defining Food Insecurity

Since the enhanced recognition of food insecurity in the latter half of the 20th century, several definitions have emerged and evolved on the matter. One of the earliest definitions was put forth by the World Food Council (WFC) in 1988, where the issue was defined using the term 'food security.' As cited in the work of Phillips and Taylor (1990):

> Food security implies two things. First, it implies that food is available, accessible, affordable – when and where needed – in sufficient quantity and quality. Second, it implies an assurance that this state of affairs can reasonably be expected to continue; or, in other words, that it can be sustained. To put it simply, food security exists when adequate food is available to all people on a regular basis. (p. 1304)

This definition has changed to not only become more descriptive, but also to reflect a shift in conversation regarding the problem. Specifically, this evolution is evident throughout the late 1990s and early 2000s.

At the 1996 World Food Summit, food security was defined as "a situation that exists when all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets dietary needs and food preferences for an active and healthy life" (Barrett, 1990, p. 825). In the early 2000s, the household perspective of food security experienced increasing popularity and was commonly defined as "the assured access of all people to enough food for a healthy and active life" (Bartfeld and Dunifon, 2006, p. 921). However, a more current definition, employing a new term for the subject, is outlined by Gallegos, Ramsey, and Ong (2014) when they write, "food insecurity may occur when access to

or availability of sufficient amounts of healthy, culturally-appropriate and nutritious foods are compromised, or when individuals cannot access these foods in socially-acceptable ways" (p. 498). It is apparent that since its study, the definition of food insecurity has been shaped and revised. The term has evolved to become more inclusive, addressing the cultural relevance of individuals suffering from hunger. Additionally, emphasis has increased in describing one's state of hunger as being food insecure. Therefore, while food security is still used to discuss hunger, food insecurity has become a more frequently adopted term to describe an individual's state of hunger.

For the purposes of my continued discussion, the definitions presented by Bartfeld and Dunifon (2006) and Gallegos, Ramsey, and Ong (2014), will be used when referring to food insecurity. Collectively, their definitions reflect a diversity of perspectives required to address food insecurity from an interdisciplinary approach. The work of Bartfeld and Dunifon (2006) comes from the perspective of a food security research and policy specialist, as well as that of an ecologist. Gallegos, Ramsey, and Ong (2014) represent the perspective of higher educational professionals of Australia. Their professional fields of study encompass exercise science and nutrition sciences and dietetics[1]. Moreover, the inclusivity of the language of their definition, in conjunction with the household element of Bartfeld and Dunifon (2006), fosters a more integrative approach to the issue. This integration is consistent with my postulation that addressing food insecurity profitably will require a multi-faceted approach and understanding of the issue by a for-profit entity, as evidenced in the firm's business model. Thus, in assessing how food insecurity has been defined since traction for its study began in the late 1980s/early 1990s, I have found that the definitions of Bartfeld and Dunifon (2006) and Gallegos, Ramsey, and Ong (2014) best reflect the intent of this paper and diminish complexity in discussing food insecurity.

Measuring Food Insecurity

Similar, to defining food insecurity multiple measurement methods have emerged since the examination of this issue. Specifically, measurement methods have been devised from both a sociological/demographical perspective and an economic perspective. Consequently, interpretations of the extent of food insecurity and response vary. Food insecurity's reach across sociological/demographical and economic boundaries causes concern for the socially responsible for-profit entity, as well as other parties committed to addressing food insecurity. Particularly, concern arises in organizing and deploying resources to benefit impacted individuals. Effective response, then, especially from a for-profit entity, will require understanding of both sociological/demographical and economic dimensions, as these elements inform customer segments, the first building block in business model generation (Osterwalder and Pigneur, 2010, p.16).

The primary means by which data on individuals facing food insecurity is gathered is through the Current Population Survey Food Security Supplement (CPS-FSS). The CPS-FSS is a supplemental survey to the Current Population Survey, "a monthly labor force survey of about 50,000 households conducted by the Census Bureau for the Bureau of Labor Statistics" (Current Population Survey Food Security Supplement, 2019, para.1). Particularly, the Core Food Security Module (CFSM) is recognized as "the official set of 18 questions used to measure food insecurity in the United States" (Gundersen, Kreider, and Pepper, 2011, pp. 282-283). While this method provides insight into the economic status of individuals experiencing food insecurity, the survey follows a more sociological/demographical approach, examining the extent to which households (some comprised of only adults and others comprised of adults and children) are

impacted by food insecurity. Coleman-Jensen (2010) further explains how household food insecurity status is determined through use of this module by stating the following:

> Households responding affirmatively to three or more items on the Food Security Core Module are defined as food insecure. Households answering positively to zero conditions are defined as food secure. Households responding affirmatively to one or two conditions are marginally food insecure. (p. 218)

Examples of the module's questions include 1) "In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money for food?, 2) In the last 12 months, were you ever hungry but didn't eat because there wasn't enough money for food?, 3) In the last 12 months, since (current month) of last year, did you ever cut the size of (your child's/any of the children's) meals because there wasn't enough money for food?" (Economic Research Service-USDA, 2012, pp. 4, 12).

These questions are significant because they emphasize the sociological/demographical approach to measuring food insecurity. Specifically, because the CFSM asks respondents about their status as individuals or families comprised of children, the government and other entities committed to addressing food insecurity can leverage the data to better inform targeting. Targeting refers to the focus with which resources are deployed to most positively impact affected individuals. However, the CFSM also provides additional sociological insights.

Since its use in the mid-1990s, the CFSM has been used in conjunction with the CPS. "The CPS represents the official data source for official poverty and unemployment rates" (Gundersen, Kreider, and Pepper, 2011, p. 285). As poverty and unemployment are two of the leading factors contributing to household food insecurity, affirmative responses to the CFSM questions provide meaningful insight on the socioeconomic status of those impacted by food

insecurity. Specifically, affirmative responses to the CFSM questions indicate how a person's socioeconomic status contributes to not having enough food. Furthermore, the longevity of the survey and the frequency with which it has been conducted, offers a plethora of public information for a for-profit entity to leverage in understanding trends and the scope of food insecurity in the United States and how it can positively serve those most impacted.

Another consideration regarding the measurement of food insecurity includes a conceptual framework for the optimal control problem. This model assumes a more economic approach to understanding food insecurity and was put forth by Phillips and Taylor (1990). Their work supports household food insecurity measurement through the examination of two household types, the market-food-oriented household and the non-market-food-oriented household. They further define these households in the following manner:

> "A market-food-oriented household may be defined as any household that acquires the bulk of its food through the exchange of resources such as cash, services or goods. A non-market-food-oriented household may be defined as any household that acquires the bulk of its food supplies through home food production." (pp. 1305-1306)

Phillips and Taylor (1990) assert "These household types may be further refined by grouping households by sources of income, by percentage of market dependence, resource base, or location such as urban or rural" (p. 1306). These considerations provide a significant distinction between household types and a meaningful observation of the market segments most susceptible to food insecurity. Collectively, such a distinction and an observation can aid in informing a for-profit entity of their relevant customer segments and relevant response to impacted persons.

However, the most valuable insight the Philips and Taylors' framework provides to a for-profit entity seeking to address food insecurity, is that it plainly defines food insecurity as an

optimal control problem; whereby, there is "an optimal allocation of scarce resources among competing ends over an interval of time to satisfy a stated objective" (Phillips and Taylor, 1990, p. 1306). In essence, food represents a scarce resource that is necessary for the sustainment of life, yet there is a significant challenge in ensuring all members of the population have access to it to support a healthy lifestyle. Additionally, with numerous institutions currently committed to eradicating hunger in the U.S., competition exists in resolving the problem effectively. Thus, the optimal control model highlights the economic significance of measuring food insecurity and targeting response.

Overall, the measurement of food insecurity at the household level has been widely adopted and affects how programs are targeted to benefit those in need (von Braun, 1990). This notion of the importance of targeting is further supported by Barrett (2010) when he writes, "Perhaps the most important factor determining the efficacy of food security interventions is the quality of targeting" (p. 827). Effective targeting, however, is only made possible with effective measuring. Coleman-Jensen (2010) emphasizes this point when she writes, "Refining the measurement of food insecurity to best estimate prevalence and accurately identify household characteristics is important because food insecurity negatively impacts quality of life" (p. 217). In essence, Coleman-Jensen sums up the problem regarding the measurement of food insecurity. Society needs a better solution to measure food insecurity, such that targeting efforts can be improved. Subsequently, better targeting will contribute to the increased quality of life for those impacted by food insecurity.

Map the Gap, an annual study conducted by Feeding America, the nation's largest hunger relief organization, might offer a solution for more effective measurement of food insecurity. The measurement tool pairs elements of the household and optimal control measurement

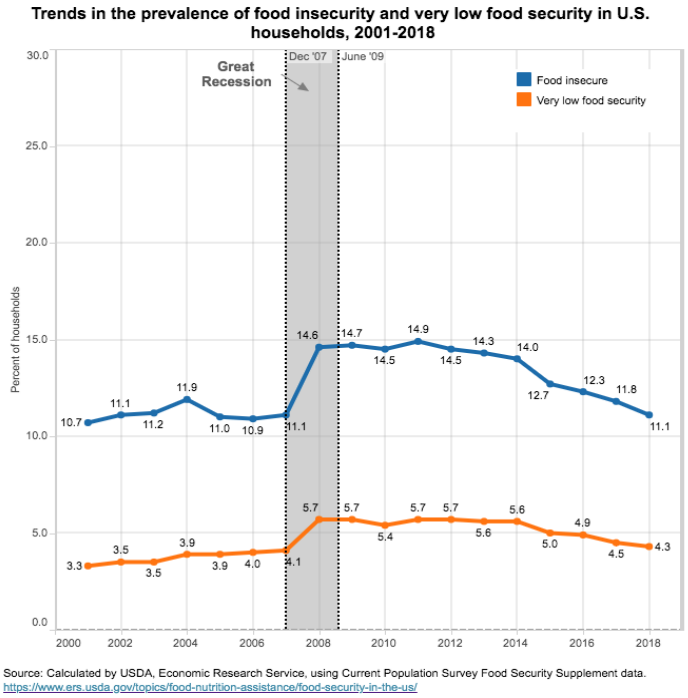
strategies to achieve food insecurity measurement as outlined by Coleman-Jensen. By leveraging sociological/demographic data, in combination with economic indicators, Map the Gap uses "publicly available state and local data from the U.S. Census Bureau of Labor Statistics", as well as from "Nielsen and national survey data from the Census Bureau" to "accurately estimate the number of people who may be food insecure in every U.S. county and congressional district" (Food Insecurity Reports and Briefs, para. 2). Therefore, for the for-profit firm committed to addressing food insecurity, opportunity exists to enhance targeting by leveraging the data made available through Map the Gap. Specifically, review of this data will mark a significant milestone for a for-profit in identifying and establishing its targeted customer segment(s).

Food Insecurity by the Numbers

Customer segments can further be defined in review of statistics made available by the United States Department of Agriculture. According to the USDA Economic Research Service, "11.1 percent (14.3 million) of U.S. households were food insecure at some time during 2018" (Interactive Charts and Highlights, para. 2). Of that 11.1 percent, 6.8 percent (8.7 million) of households were classified as having low food security, while 4.3 percent (5.6 million) of households had very low food security (Interactive Charts and Highlights, paras. 3-4). The graph below illustrates the 17-year trend in the prevalence of food insecurity and very low food insecurity in U.S. households.

Figure 1

Trends in the Prevalence of Food Insecurity and Very Low Food Insecurity Households, 2001-2018 (Interactive Charts and Highlights)



As evidenced in the graph, the United States has experienced ebbs and flows in food insecurity from the years 2001 to 2018, with the highest level of food insecurity being reported during The Great Recession of 2008-2009. With the exception of 2011, food insecurity has been on the decline since the end of the recession. However, at the time of this paper, with the events of COVID-19, food insecurity in the U.S. is expected to increase once again.

According to a recent press release from Feeding America, an estimated 54 million people are projected to be food insecure as a result of the coronavirus. This represents approximately 16.3 percent of the nation's population. Stay at home orders, school closures, increasing unemployment rates, and increasing poverty rates contribute to this high figure. Among the 54 million projected to be food insecure, 18 million are children. "This would mean 1

in 4 children could face hunger in America this year" (Feeding America Research Projects Child Food Insecurity Could Hit All Time High, 2020, para. 2).

In addition to children, adults who have a service occupation or work in the leisure and hospitality industry are significantly impacted by food insecurity as a result of the coronavirus. "Service occupations represent 17% of all occupation types and 10% of working adults are employed in the leisure and hospitality industry" (The Impact of Coronavirus on Food Insecurity, 2020, p. 2). Moreover, these individuals already face above-average rates of food insecurity (16-17%) (The Impact of Coronavirus on Food Insecurity, 2020, p. 2). Therefore, the situation invoked by the coronavirus pandemic illuminates the great need for hunger relief to these individuals impacted by food insecurity.

This need for hunger relief is compounded by the reality that current governmental hunger relief programs, such as the Supplemental Nutrition Assistance Program (SNAP, formerly known as the Food Stamps Program) and the National School Lunch Program (NSLP), are not operating as intended. Social distancing practices aimed at slowing the spread of COVID-19 have proved to be barriers in the distribution of food to those who qualify for the aforementioned programs. While the USDA Food and Nutrition Service has responded to this disruption by issuing mass meal waivers that allow "sponsors to serve meals in a non-congregate setting and at school sites during school closures" (COVID-19 Congregate Meal Waivers & Q&As on Summer Meal Delivery Using Existing Authority, 2020, para. 1), the long-term sustainability of such efforts is uncertain. Moreover, Feeding America's 200-member food banks are experiencing an increase in demand, with a simultaneous decline in volunteers and retail donations because of the virus (The Impact of Coronavirus on Food Insecurity, p. 3). Such complications, experienced by the federal government and Feeding America, beg the question if

an alternative solution exists to addressing food insecurity through the operations of a for-profit firm committed to serving children and adults who work in the service industry.

The Solution

This section will focus on assessing the viability of a for-profit firm to address food insecurity as its main source of revenue. The preceding discussion identified three key issues regarding food insecurity. These included varying definitions of food insecurity, multiple measurement and targeting strategies, and current responses to the number of individuals facing food insecurity in the United States. The for-profit firm will need to leverage an understanding of each issue to effectively resolve the problem of a substantial amount of people, particularly children and those employed in the service sector, having a low quality of life in the U.S. as a result of being hungry.

Before proceeding, I would like to acknowledge that the effects of COVID-19 do not represent the basis for my postulation that a for-profit entity may be able to more effectively address food insecurity than a non-profit, such as Feeding America, or the federal government. Rather, the effects of COVID-19 magnify the main inefficiency – food distribution – in connecting food insecure Americans with the abundant and vital resource. Therefore, while the sources in the preceding sub-section, as well as in the following sub-section, highlight the impact COVID-19 has had on the United States' food supply chain, particularly the distribution function, these sources serve to illuminate the need for a more efficient and sustainable response in connecting the hungry with food.

Ultimately, this section seeks to illustrate why food distribution represents the best area of opportunity to address food insecurity profitably. This will be achieved through a brief discussion of the food distribution gap and review of two business models that emphasize food

distribution. This section will conclude with a new and proposed business model that integrates successful distribution strategies of firms operating in the current U.S. food system.

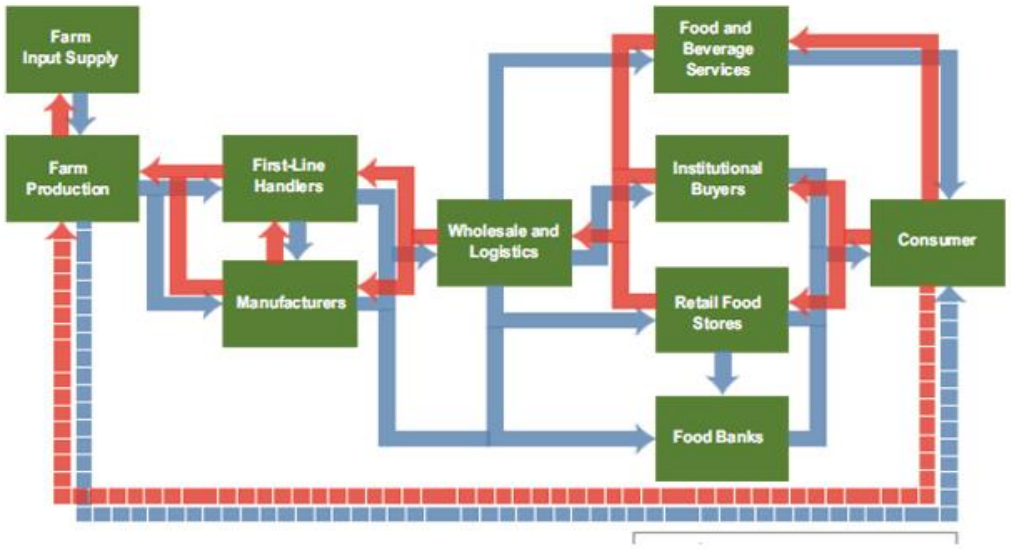
Food Distribution and Food Waste

The primary opportunity for a for-profit entity to address food insecurity is through enhancing food distribution efforts. The opportunity to enhance distribution efforts is evidenced by the response of the federal government, and Feeding America, as they seek to feed people amidst COVID-19. Support of distribution improvement is reinforced by Susie Cagle (2020) of *The Guardian*, when she describes the food supply chain of the United States as "missing a crucial link, bridging the gap between food that would be wasted and a growing need in food banks nationwide" (para. 21). This link is a compelling realization, especially in consideration of the figures presented in the previous section that highlight the percentage of the U.S. population that is food insecure or faces food insecurity as a result of the coronavirus. Even more compelling, according to the John Hopkins Center for a Livable Future – Food System Primer, "an estimated 31 to 40 percent of all food that is harvested is never eaten" (Wasted Food, para. 1). Several factors contribute to this problem, such as natural disasters, the cosmetic appearance of food, etc. However, distribution capabilities play a significant role in ensuring food that is produced reaches the end consumer. Therefore, stronger distribution networks should contribute to less food waste.

The graphic below illustrates a conceptual model of a food supply chain within the U.S. food system. This diagram, acquired from the National Center for Biotechnology Information – Overview of the U.S. Food System (2015), shows the interconnections between relevant supply chain partners in mapping a food supply's point of origin to point of consumption.

Figure 2

Conceptual Model of a Food Supply Chain



Note. The orange arrows indicate flows of food, services, and information about food. The blue arrows indicate flows of information about consumer preferences (Overview of the U.S. Food System, 2015, para. 9).

As evidenced in the diagram, multiple entities are responsible for ensuring food that has been harvested reaches end consumers. Wholesalers and logisticians play an incredibly important role is this endeavor, as they supply firms with the final product to be purchased or received by consumers through the mediums listed (food and beverage services, institutional buyers, retail food stores, and food banks). More specifically, "the wholesale food industry consists of companies that purchase and store food products in a network of warehouse facilities and then sell and distribute these products to retail outlets using an extensive transportation infrastructure" (Overview of the U.S. Food System, 2015, para. 5). Conversely, "a logistics firm refers to a company that does not actually assume ownership of the food products but is paid to provide the service of logistical distribution and inventory coordination" (Overview of the U.S. Food

System, 2015, para. 5). This distinction is important and will be further explored in examining two successful firms within the U.S. food system that conduct large food distribution activities.

Food Distribution Firms Spotlight

Two firms committed to the distribution of food across the United States include Sysco and DoorDash. Review of these firms will illuminate the role each entity assumes in the U.S. food supply chain. Moreover, review of each firm's scope of activities and value propositions will provide insight into how a for-profit entity can integrate components of each distributor's business model to more efficiently address food insecurity. In essence, by understanding Sysco and DoorDash's respective roles in the U.S. food distribution system, a for-profit entity committed to addressing food insecurity can glean valuable insights to discern its own positioning to increase efficiency in distributing food to those in need.

Sysco represents a business to business (B2B) food wholesaler, while DoorDash represents a business to customer (B2C) food service delivery provider. Sysco's end users predominately comprise restaurant chains and institutional food service providers, such as healthcare and educational facilities (Sysco, 2020, para. 1). DoorDash predominately serves end consumers by directly delivering food from restaurants (DoorDash, 2020, para.1). The distribution activities of each firm, considering the definitions put forth in Overview of the U.S. Food System (2015), thus, distinguish them as follows: Sysco is a wholesaler, while DoorDash is a logistician.

Despite assuming different roles in the United States' food supply chain, each firm demonstrates success in their respective industry in connecting target customers with food. Success is evident in review of each firm's revenues, as well as their respective positions in their industries. Sysco reported revenues of over $60 billion in 2019 (Sysco, p.44). DoorDash reported

over $900 million in revenue in 2019 (DoorDash, sidebar). Additionally, Sysco is at the top of a fragmented industry containing 16,500 foodservice distribution companies (Johnson, para.1). DoorDash is at the top of the private food service delivery industry, an industry expected to reach $40 billion by 2021 (Griswold, 2019, para. 8). Earning the top spot in their respective industries is no easy feat. However, differentiating value propositions support the success of their business models. Such differentiation will also be the key to success for a for-profit entity seeking to address food insecurity.

According to Osterwalder and Pigneur (2010), "A value proposition creates value for a customer segment through a distinct mix of elements catering to that segment's needs" (p.23). They go on to write, "Values may be quantitative (e.g. price, speed of service) or qualitative (e.g. design, customer experience)" (p. 23). Sysco and DoorDash are able to differentiate themselves through the qualitative values of performance, accessibility, and convenience/usability. Specifically, Sysco's vast network of 320 distribution facilities contributes to the firm's ability to deliver a high level of performance in connecting food with its customers. This network also supports accessibility, as Sysco can employ a locally focused broadline distribution strategy (Broadline, 2020, para. 1). DoorDash primarily leverages performance and convenience/usability through app-based ordering and food delivery (Increase Your Takeout Sales, 2019, para. 1).

Overall, these two firms represent relevant and successful entities dedicated to connecting people with food. Their operations are for-profit and assume respective, yet important roles in the food supply chain as a wholesaler and logistician. They deliver value to their customers through focusing efforts on performance, accessibility, and convenience/usability. These propositions will be further explored to illustrate how they can be adopted by a for-profit firm seeking to address food insecurity. Therefore, despite having a different clientele from Sysco and

DoorDash, the for-profit entity committed to resolving hunger can employ the same propositions to effectively distribute food to those in need.

The sub-section below represents a proposed business model for which a for-profit entity can integrate elements of both Sysco and DoorDash's models to effectively address food insecurity in the United States. However, the viability in successfully addressing food insecurity profitably, not only hinges on successful business model integration. It also hinges on the application of knowledge of the challenges presented previously (i.e. defining food insecurity, measuring the extent and response of food insecurity, and recognizing the volume and segments of people who are most impacted by food insecurity).

A New Model

This sub-section will outline a new business model for addressing food insecurity. For purposes of conciseness, the framework through which this will be achieved is based on the Business Model Canvas developed by Alexander Osterwalder and Yves Pigneur (2010). Osterwalder and Pigneur (2010) identify and define nine components for a successful business model in their book, *Business Model Generation*. These components include Customer Segments, Value Propositions, Channels, Customer Relationships, Revenue Streams, Key Resources, Key Activities, Key Partnerships, and Cost Structure. Definitions for each component can be found in the Appendix.

The proposed business model will provide an example of how each component could be leveraged by a firm to address food insecurity profitably, giving special consideration to the challenges associated with such an endeavor, while integrating relevant aspects of the Sysco and DoorDash business models. In essence, the proposed model serves as the culmination of comprehension of the issues surrounding food insecurity, through the creative integration of

existing food distribution business models, to reflect how a new, socially responsible for-profit firm can viably address food insecurity. Each component of the model will be discussed below. A template of the model in visual form can be found in Appendix 2.

Customer Segments

Based on the data previously cited from Feeding America's Map the Gap, a for-profit entity committed to addressing food insecurity should adopt a segmented approach when targeting consumers. Specifically, as children and adults employed in service occupations represent the largest number of individuals facing food insecurity, a for-profit firm should distinguish how the needs of food insecure individuals differ. While children and adults have the immediate need of hunger, there is a population of U.S. households that contain only food insecure adults working in service occupations, while another population contains food insecure adults working in service occupations that have children. Additional research should be conducted to understand how meeting the needs of these households differ.

Value Propositions

The main value a for-profit entity can provide in addressing food insecurity of families and adults employed in service occupations is performance, convenience, and accessibility. This is achieved throughout the firm's value chain, specifically in emphasizing distribution and food service activities. Given this context, these propositions can be defined as follows:

Performance – The consistent on-time pick-up and delivery of food to food recovery centers; The safe, speedy, and friendly serving of meals to food recovery center patrons.

Convenience – The harvesting of food products from restaurants and farms that otherwise would be destined for food waste; The cadenced pick-up and drop-off of food recovery center patrons

to food recovery centers. (This pick-up service applies only to qualified individuals based on an application requesting use of shuttle service).

Accessibility – Flexible food procurement transportation options (i.e. vans/trucks with commercial refrigeration capabilities) to ease food recovery; Medium to high capacity shuttle vehicles to transport food recovery center patrons to food recovery centers.

Channels

The aforementioned value propositions can be achieved through partner channels. Specifically, by partnering with restaurants and farms in the recovery of surplus food, a for-profit firm can collect food that otherwise would have been wasted. Upon collection, food can be taken to the firm's recovery centers that prepare and serve meals with the surplus food. It is through the food pick-up and drop-off (distribution) activities that a for-profit firm can apply the value propositions of performance and convenience similar to that of Sysco and DoorDash. By operating a firm-owned fleet of food recovery vehicles (trucks/vans with refrigeration capabilities), a for-profit firm can deploy resources with greater flexibility to pick-up food destined for waste from farms and restaurants (no greater than 30 miles from each food recovery center) and deliver it to the firm's food recovery centers.

Accessibility in this business model exclusively mirrors that of DoorDash. However, instead of delivering food to consumers, the for-profit firm addressing food insecurity will transport eligible food recovery patrons to and from the food recovery center for a meal. Specifically, the value of accessibility will be achieved by servicing individuals within 20 miles of the food recovery center, who do not have reliable transportation (referring either to not owning a car or not being able to afford to travel 20 miles) to get to the center on their own, with a cadenced shuttle service within the hours of operation of the food recovery center. The vehicles

used in this transportation activity will also be owned by the for-profit firm, similar to the food recovery vehicles. Eligibility for the shuttle service is dependent on the following:

- Eligible individuals must provide proof of income that reflects annual earnings less than $25,500.

This figure is based on the Federal poverty line for a family of four in 2018, which was $25,465 (Food Insecurity by Household Characteristics, 2019 para.10).

Customer Relationships

Based on the outlined customer segments, value propositions, and channels, a for-profit firm committed to addressing food insecurity through employment of this model will do so through personal assistance. Osterwalder and Pigneur (2010) describe personal assistance as a "relationship based on human interaction" (29). They go on to write of personal assistance, "The customer can communicate with a real customer representative to get help during the sales process or after the purchase is complete" (29). In the case of this business model, personal assistance will manifest itself in two ways. First, the firm's employees responsible for picking up food destined for waste from farms and restaurants will demonstrate friendly and competent handling of the collected food products. Additionally, these employees will be responsible for providing the food provider with the proper paperwork evidencing the purchase of surplus food at a reduced rate. Specifically, the for-profit firm will purchase food at no-more than 3% of the original food cost as absorbed by the supplying party.

The second way personal assistance will manifest itself is through the firm's direct interaction with food recovery center patrons through the shuttle service and serving of meals. Employees responsible for conducting shuttle operations will verify identification of shuttle participants. This will be done through scanning a unique bar code, indicating that the individual

has a subscription. This unique bar code will also be verified prior to entrance into the food recovery center to track patron usage. Additionally, shuttle operators will exercise friendly service and deploy defensive driving techniques to minimize safety risks in transporting patrons to the food recovery center. Individuals working directly at the food recovery center will serve patrons in a dignified and cordial manner. This will be accomplished through taking patrons' orders and delivering prepared meals to their table.

Revenue Streams

A for-profit firm will generate revenue, based on the previous components of this business model, by selling subscription fees. Specifically, food insecure families and adults employed in service occupations will purchase a monthly subscription at a price of $140. This subscription will provide use of the food recovery center for meal attainment at unlimited consumption quantities when services are in use. Additionally, this fee will include shuttle services for qualified individuals. The subscription figure was determined upon finding that food insecure individuals spent an average of $3.02 per meal (Food Price Variation, 2019, para. 3). "At $3.02 per meal, a person who is food insecure is expected to spend $275 on food per month" (Food Price Variation, 2019, para. 3). This $275 assumes 84 meals are consumed per month (3 meals/day x 7 days/week x 4 weeks/month = 84).

As the for-profit firm will provide dining and shuttle services during dinner hours daily (4:30 – 8:00 p.m.), with all-day dining and shuttle services occurring at recovery centers on the weekends (8:00 a.m – 8: 30 p.m), the for-profit firm can expect to serve 11 meals to food insecure individuals per week. This means that the for-profit firm can expect to meet the food needs of its patrons by providing approximately 44 meals per month per subscription. Therefore, as 44 meals comprise just more than half of the 84 meals an individual consumes per month, a

subscription fee of $140 is an equitable rate. Specifically, the for-profit firm is providing approximately 52% of the food insecure individuals monthly meals. 52% multiplied by $275 equals $144.04. This figure represents what food insecure individuals would spend on 44 of their 84 meals per month. Therefore, by offering a subscription fee of $140 per month to food secure individuals, in conjunction with shuttle rides to the food recovery center for eligible patrons, the for-profit firm is not only providing a meal at an affordable rate for food insecure patrons, but also providing a small cost savings.

Key Resources

The main resources required to effectively implement this currently proposed model include the physical resources of surplus food, a food recovery building equipped to serve patrons freshly prepared meals, trucks/vans to transport surplus food to recovery centers, and trucks/vans to shuttle eligible patrons to food recovery centers. Human resources will include employees to prepare food and serve patrons, as well as to shuttle eligible patrons to and from food recovery centers.

Key Activities

Two types of key activities, outlined by Osterwalder and Pigneur (2010), are production and problem solving (p. 27). A for-profit firm assuming use of the proposed model will need to leverage both types of activity. For example, production activities will consist of meal prep and service. Problem solving activities will focus on enhancing food collection efforts and maintaining certifications required to safely procure, store, and serve food. Additionally, the firm will need to problem solve its negotiation strategy to keep the purchase of surplus food at a minimum. As food cost represents 28-35% of expenses for a restaurant (Gorodesky and Lange), the for-profit firm will need to be diligent in keeping procurement costs low. Hence, the previous

mentioning under Customer Relationships, of keeping surplus food purchase at a price no greater than 3.0% of the original cost of the food.

Key Partnerships

Strategic alliances comprise the main type of partnership a for-profit entity will need to establish in using the proposed model. Specifically, strategic alliances with farms and restaurants will need to be founded and maintained to ensure the continued expansion and development of a supply base for procuring food that otherwise would be wasted.

Cost Structure

The costs associated with operating the proposed business model will include the purchase of surplus food, truck/van purchase for food recovery and patron shuttling, truck/van maintenance and fuel costs, food recovery building expenditures (i.e. fixed costs), and employee compensation. To ensure profitability, the firm should use the following breakdown:

- Purchase of Surplus Food
    - No greater than 3% of the original cost of the food
    - $8,000/month
- Truck/Van Purchase with refrigeration capabilities (Reefer/Refrigerated Truck for Sale, 2020)
    - New: Approximately $130,000 (based on 2020 Hino 338 Model)
    - Used: Approximately $15,000 (based on 2013 Isuzu NPR DSL)
- Truck/Van Maintenance and Fuel Costs
    - Maintenance: $1,200/month
    - Fuel Costs: $3,000/month
- Food Recovery Building Expenditures

    - $500/month
- Employee Compensation
    - $7,000/month

Based on these estimated monthly costs (assuming vehicle purchase has already been absorbed), the for-profit entity can expect to operational expenses to be about $19,700 per month. This means that the firm must sell 141 subscriptions per month to just be deemed profitable. Success in achieving the sale of 141 subscriptions will be largely dependent on the area in which the firm locates its food recovery center. Specifically, areas with more food insecure families and adults working in service occupations will provide the greatest opportunity to increase sales and subsequently profitability.

Conclusion

This paper proposed a new business model for a for-profit entity to employ in addressing food insecurity faced by families and adults working in service occupations. To my knowledge, existing business models that exist to address food insecurity are for the operations of non-profit entities. The proposed was devised through the integration of two food distributor business models, in conjunction with review of the definitions surrounding food insecurity, food insecurity measurement and response strategies, and the current volume and segments of people facing food insecurity in the United States. The proposed model suggests the viability of a for-profit firm to address food insecurity. However, true verification of viability will come through employment of the model.

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Footnotes

1While my discussion focuses on food insecurity in the United States, the definition put forth by Gallegos, Ramsey, and Ong (2014) is relevant, as food insecurity is a global issue.

Appendix

Customer Segments: Define the different groups of people or organizations an enterprise aims to reach or serve (p.20).

Value Proposition: Described the bundle of products and services that create value for a specific customer segment (p. 22).

Channels: Describes how a company communicates with and reaches its customer segments to deliver a value proposition (p. 26).

Customer Relationships: Describes the types of relationships a company establishes with specific customer segments (p. 28).

Revenue Streams: Represents the cash a company generates from each customer segment (p. 30).

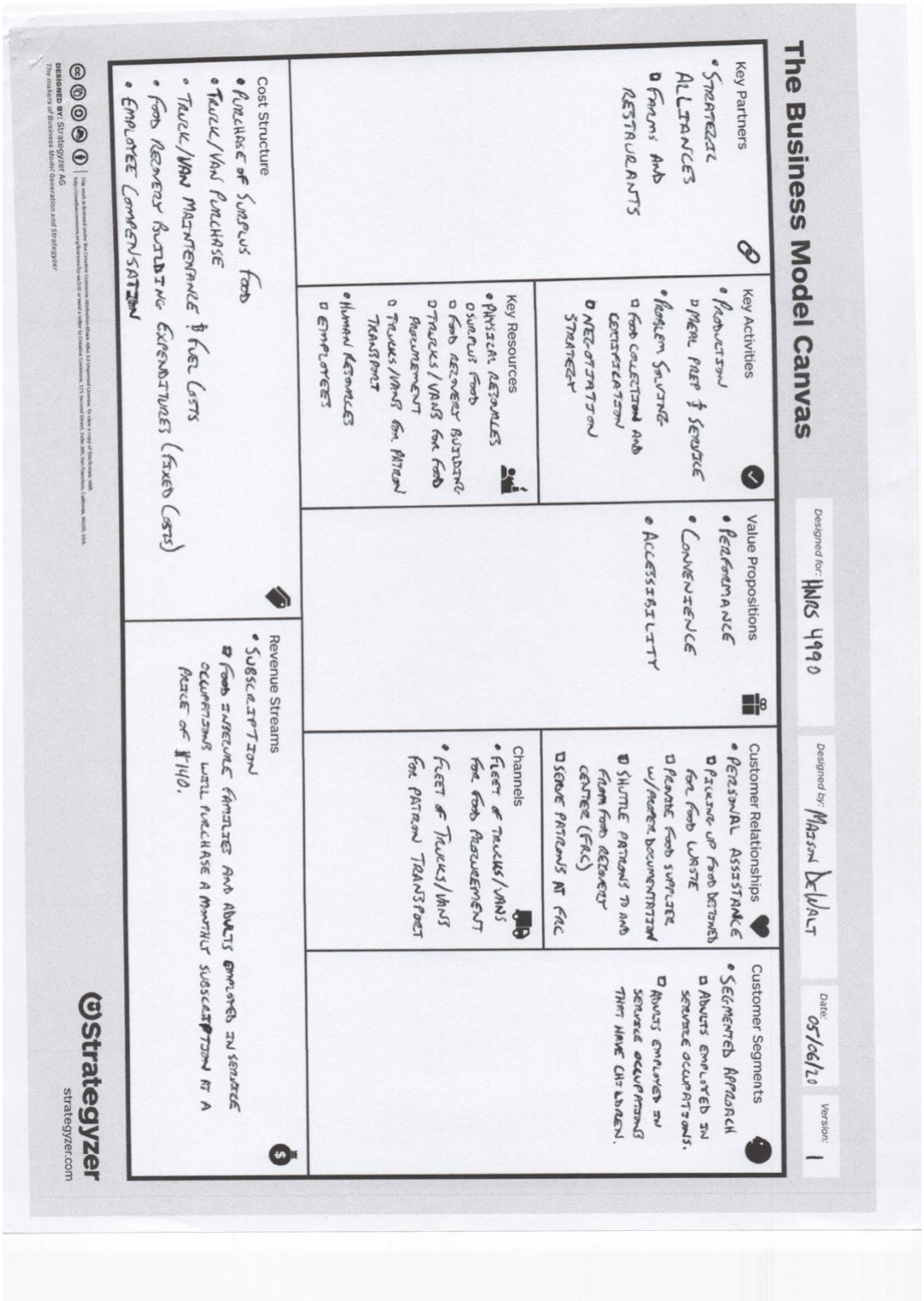
Key Resources: Describes the most important assets required to make a business model work (p. 34).

Key Activities: Describes the most important things a company must do to make its business model work (p. 36).

Key Partnerships: Describes the network of suppliers and partners that make the business model work (p.38).

Cost Structure: Describes all costs incurred to operate a business model (p. 40).

Appendix 2


The Business Model Canvas
Designed for: HNRS 4990
Designed by: Mason DeWalt
Date: 05/06/20
Version: 1
Key Partners
• Strategize Alliances
□ Farms and Restaurants
Key Activities
• Production
□ Meal Prep & Service
• Problem Solving
□ Food Collection and Certification
□ Negotiation Strategy
Value Propositions
• Performance
• Convenience
• Accessibility
Customer Relationships
• Personal Assistance
□ Picking up food between Fac food waste
□ Phone food supplier w/ proper documentation
□ Shuttle patrons to and from food resource center (FRC)
□ Serve patrons at FRC
Customer Segments
• Segmented Approach
□ Adults employed in service occupations.
□ Adults employed in service occupations that have children.
Key Resources
• Physical Resources
□ Surplus food
□ Food resource building
□ Trucks/vans for food procurement
□ Trucks/vans for patron transport
• Human Resources
□ Employees
Channels
• Fleet of trucks/vans for food procurement
• Fleet of trucks/vans for patron transport
Cost Structure
• Purchase of surplus food
• Truck/van purchase
• Truck/van maintenance & fuel costs
• Food resource building expenditures (fixed costs)
• Employee compensation
Revenue Streams
• Subscription
□ Food insecure families and adults employed in service occupations will purchase a monthly subscription at a price of $40.
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